

July, 1995

**INFLATION AND STABILIZATION IN POLAND 1990 - 1995**

by

Stanislaw Wellisz  
Columbia University

dp 7-15 738  
pages. 25

The Polish liberalization and stabilization program put into effect on January 1, 1990, called for the removal of virtually all price controls<sup>1</sup>, and for a sharp curtailment of production subsidies. These measures magnified the effects of pre-existing inflationary forces. Within one month retail price index rose by 79.6 per cent. The inflation was, however, quickly brought under control by the stabilization measures adopted as a part of the reform package<sup>2</sup>. By August the rate of price increase declined to a 1.8 per cent monthly rate. Yet the goal of complete price stability by year-end proved to be elusive. In 1991 prices still rose by over 70 percent; in the subsequent years inflation slowed down, but it remained at a two-digit level (Table 1).

---

<sup>1</sup>. The reform reduced the extent of administered prices from 50 per cent to 10 per cent. On January 1, 1990 the administered price of domestic coal was raised by 600 per cent and that of coal for industrial use by 400 per cent. Railway freight charges and electric rates were raised by 200 per cent. Periodic further upward adjustment in administered prices took place over the next years; coal prices were decontrolled in 1993.

<sup>2</sup>. The fiscal deficit was to be reduced from 7.5 per cent of the GDP in 1989 to 1 per cent in 1990. The January 1990 volume of real credit was to be 25 per cent lower than in December, 1989.

Table 1

| Year | A   | B   |
|------|---|---|
|      | Consumer price index<br>(previous year = 100) | Fiscal budget surplus or deficit<br>as % of the GDP |
| 1990 | 717.8   | +0.4%   |
| 1991 | 171.1   | -7.0%   |
| 1992 | 142.4   | -6.0%   |
| 1993 | 135.3   | -2.7%   |
| 1994 | 133.3   | -3.2%   |

Sources: A - GUS (Central Statistical Office)

B: Ministry of Finance and World Bank estimates, as reported in World Bank (1994). The fiscal deficit estimate for 1994 was reported in Rzeczpospolita no. 259 (3908) of November 7, 1994

To throw light on the causes of the persistence of inflation, let us briefly examine Poland's post - 1990 monetary and exchange rate policy.

#### Inflation in the fixed exchange rate period.

The history of Polish stabilization may be divided into three distinct periods: the fixed exchange rate period (January 1, 1990-May 17, 1991, which was followed by the periodic adjustment period (which lasted till August 27, 1993) and by the crawling peg period.

The Solidarity-led regime which was formed in the Fall of 1989 inherited a partially liberalized and half-dismantled command system, and an economy hovering on the verge of a hyperinflation.<sup>3</sup> During the last quarter of the year the new government took measures to limit the rate of expansion of the net domestic assets, and also to reduce the gap between the official exchange rate of

---

<sup>3</sup>. See, for instance, The World Bank (1987)

the zloty and the free market rate. These steps were a preliminary to the January 1, 1990 introduction of a comprehensive stabilization and liberalization program known as the "Balcerowicz Plan"<sup>4</sup>

Among the key goals of the Balcerowicz Plan was the restoration of a stable, convertible currency. Initially, the zloty was made internally convertible. The official exchange rate which stood at 5,560 zl/\$ during the last week of December 1989, was set at 9,500 zl/\$ - somewhat below the then-prevailing black market rate. The government pledged to maintain the initial exchange rate for three months, after which it could be adjusted, if necessary. The zloty was deliberately undervalued to enable the government to adhere to its pledge in the face of the expected liberalization - induced upward price adjustment.

The adoption of the limited-horizon-fixed exchange rate policy was motivated, on one hand, by the wish to "anchor" the zloty, and, on the other, by the desire to leave room for readjustment, should the initial rate turn out to be inappropriate. Yet such a policy carried a high risk of encouraging destabilizing speculation.

In order to restrict credit expansion, the NBP sought to

---

<sup>4</sup>. For a discussion of the 1989 mini-stabilization and of the "Balcerowicz Plan" see Stanislaw Wellisz, Henryk Kierzkowski and Marek Okolski (1993)

maintain interest rates at a positive real level<sup>5</sup>. The forecast on the basis of which the NBP set the January discount rate severely underestimated the increase in the price index, and the real return on zloty deposits was, in fact, negative, while in February and in March it barely exceeded zero. But a holder of a dollar account, or of a dollar hoard, who switched to a zloty account at the beginning of January and back to dollars at the end of the guaranteed fixed exchange rate period could have earned in three months a 70 per cent return on his dollar savings! Polish households' dollar holdings, estimated at \$6 to \$9 billion, exceeded the official reserves by a factor of two or more. Even though Poland obtained a \$1 stabilization loan, large-scale speculation could have precipitated a collapse of the exchange rate. However, the government's declaration that the rate would remain fixed for three months seemingly lacked credibility. Very little switching and re-switching took place. Thus, paradoxically, the lack of credibility facilitated the maintenance of the fixed exchange rate. Devaluation at the close of the three month period turned out not to be necessary.

The restrictive fiscal and monetary measures seemed to work "too well". Originally it was foreseen that under the IMF-approved stabilization plan the fiscal budget would be in deficit during the first half of the year; this deficit was to be balanced by a second

---

<sup>5</sup> The National Bank of Poland's discount rate for January, February and March was set, respectively, at 36 per cent, 20 per cent and 10 per cent per month.

half of the year surplus. Likewise, an initial balance of payments deficit was to be compensated by a later surplus, so that, for the year as a whole, both accounts would be in balance. In fact, however, at mid year the fiscal budget was in surplus. So was the balance of payments - and foreign reserves accumulated at an unwonted rate<sup>6</sup>. There were signs of a forthcoming recession: the volume of credit (in real terms) declined more sharply than planned. Output was plummeting, and unemployment was beginning to rise. The excessive stringency resulted in an excessively rapid accumulation of reserves. The relaxation of monetary and fiscal policies seemed to be in order; the IMF goals could be met even in the face of fiscal and balance of payments deficits in the closing months of the year.

The immediate effects of fiscal and monetary relaxation were positive. The recession appeared to be stemmed, while inflation continued to abate. By September, however, prices began to rise again, while the positive effects of the monetary stimulus appeared to wear off. The government reverted to a contractionary policy,

---

<sup>6</sup> In order to slow down the growth of reserves the government put into effect temporary tariff reductions and suspensions. As a result, the unweighted average rate of protection declined from 11.65 % to 5.82% See Nogaj, Mieczyslaw (1992) p. 65.

but, in view of a deepening recession, it stopped short of drastic measures.

In 1991 the recession deepened. Profits of State-owned enterprises declined very sharply, depriving the government of a major source of revenue<sup>7</sup>. The fiscal budget was, once again, in deficit. (Table 1)

In the face of a fixed exchange rate rising prices led to a continuing real appreciation of the zloty - a highly undesirable development at a time of deepening recession. On May 17, 1991 the government reacted by reducing the nominal value of the zloty to 11,000 zl/\$.

Did the dollar peg help stabilize Polish prices? The initial announcement that the zloty would remain internally convertible into dollars at a fixed exchange rate for a three month period was meant to calm inflationary expectations. The announcement proved not to be credible, hence it did not accomplish its task. The dollar "anchor" was meant to stabilize Polish prices by providing a linkage with world prices. But, as long as the zloty was undervalued, the dollar link exercised an upward price pull. When,

---

<sup>7</sup>. In 1990 State-owned enterprises registered high profits, which reflected (1) lags in the revaluation of inventories and of depreciation allowances in the face of a rapid price rise, and (2) the increased zloty value of foreign exchange accounts held by enterprises. In 1991 and in 1992 the State owned enterprise as a whole recorded losses.

as a result of the rise of internal prices, the "anchor" began to hold, the zloty-dollar link was severed.

#### The crawl-cum-mini-devaluations period

The May 1991 mini-devaluation was accompanied by a switch from the dollar "anchor" to a trade-weighted foreign exchange basket<sup>8</sup>. This shift was not unjustified. Because of the fluctuations of the dollar-ECU exchange rate, the zloty-dollar linkage introduced an extraneous disturbing factor in the trade between Poland, and Western Europe, Poland's main trading partner. But the linkage to a basket does not have the transparency, and it does not carry the credibility, of a linkage to a single, strong currency. The abandonment of the dollar standard looked like a signal of retreat from the fixed exchange rate policy.

On October 1, 1991 the fixed parity was replaced by a "crawling peg". The initial rate of crawl was set at 1.8 per cent per month (about 24 per cent per year). On February 26, 1992 the zloty was devalued by an additional 12 per cent. Another devaluation (this time by 8 per cent) came on August 27, 1993, but, at the same time, the rate of the "crawl" rate was cut to 1.6 per cent per month.

Throughout the "crawl-cum-mini devaluations" period the NBP

---

<sup>8</sup> The US\$ was assigned a weight of 45%, the DM 35%, the Pound Sterling 10%, and the French and Swiss Francs 5% each.



followed closely what Rudiger Dornbusch called the "PPP -oriented exchange rate rule". The adherence to this rule tends, on one hand "to maintain the exchange rate constant, thereby stabilizing demand. On the other... [t]he exchange rate affects costs and prices through the domestic cost of imported intermediate goods"<sup>9</sup>. Between the second quarter of 1991 and the second quarter of 1993 foreign reserves remained at an approximately constant level, and so did the real exchange rate (Table 2) The exchange rate adjustment system mimicked, as it were, a policy of flexible exchange, putting the entire responsibility on the maintenance of price stability on the domestic fiscal and monetary authorities.

---

<sup>9</sup>. Dornbusch (1982) p. 159

Table 2

Indexes of Consumer prices and of the real effective exchange rate, 1991-1994 (1990 =100) and foreign currency reserves (\$ billion).

| Year | Quarter | C.P.I. | Real eff.exch. rate | Foreign reserves |
|------|---------|--------|---------------------|------------------|
| 1991 | I       | 153.6  | 145.5               | 4.305            |
|      | II      | 171.5  | 160.6               | 3.898            |
|      | III     | 181.9  | 154.9               | 4.373            |
|      | IV      | 199.7  | 154.7               | 3.625            |
| 1992 | I       | 225.6  | 154.6               | 3.637            |
|      | II      | 246.1  | 147.9               | 3.948            |
|      | III     | 264.6  | 148.8               | 4.180            |
|      | IV      | 290.9  | 158.0               | 3.992            |
| 1993 | I       | 319.0  | 165.7               | 3.467            |
|      | II      | 339.8  | 165.8               | 3.186            |
|      | III     | 357.2  | 160.6               | 3.539            |
|      | IV      | 390.0  | 159.4               | 3.985            |
| 1994 | I       | 422.7  | 164.2               | 4.786            |
|      | II      | 458.8  | 165.2               | 4.896            |
|      | III     | 479.6  | 164.1               | 5.741            |
|      | IV      | 520.3  | 168.4               | 5.728            |

Source: IMF

### The 1991-1993 Polish inflation: some statistical measures

Let us now inquire into the sources of inflation in the "crawl-cum-mini devaluations" period.

In 1991-1993 the Polish economy was still in an early stage of transition. Given the fledgling banking system there was possibility of an atypical price response to fiscal and monetary stimuli. Possibly, too, exogenous shocks (changes in the tariff structure, in the internal tax structure, adjustments in the administered prices of transport and of energy) may have had a

marked effect on the inflation rate.

To throw light on these issues we shall compare the behavior of the Polish economy with that of other countries.<sup>10</sup>

We first address the issues of the role of money and of banking in the Polish economy. The Polish M2/GDP and credit/ GDP ratios are lower than those in Western Europe, United States, or Japan. Cross-section regressions show, However, that the degree of monetization, as measured by the M2/GDP ratio, is positively, related to the GDP per capita<sup>11</sup> The actual degree of monetization

---

<sup>10</sup>. The following discussion is based on cross-section comparisons for the years 1991, 1992 and 1993. The analysis utilizes IMF data for all countries of the world, except for countries with fewer than 2 million inhabitants. The sample size varies, since not all data are available for all the IMF-member countries for all three years. The differences in coverage are of minor importance since the estimates for the three years are highly consistent. It should also be pointed out that the IMF figures utilized in the analysis, were obtained by converting national currencies into dollars at official exchange rates. This method of conversion introduces "white noise". Summers and Heston (1991) also shows that such figures are biased against the low-income countries.

<sup>11</sup> The following are the relevant statistics of the regression of M2/GDP on GDP/capita (where GDP is measured in '000 US\$)

| Year | # of<br>observ. | Adj.<br>R <sup>2</sup> | F<br>value | Prob<br>>F | Regr.<br>coeff. | T<br>value | Prob.<br>>T |
|------|-----------------|------------------------|------------|------------|-----------------|------------|-------------|
| 1991 | 79              | 0.3665                 | 46.127     | 0.0001     | 0.019807        | 6.792      | 0.0001      |
| 1992 | 70              | 0.3764                 | 42.642     | 0.0001     | 0.017863        | 6.530      | 0.0001      |
| 1993 | 56              | 0.4553                 | 46.977     | 0.0001     | 0.019499        | 6.854      | 0.0001      |

It should be noted that the inclusion of GDP in the denominator on the LHS and in the numerator on the RHS biases the results against the hypothesis that the "depth" of monetization increases with the level of development.

of Poland does not deviate in a statistically significant fashion from the degree of monetization predicted by the regression of M2/GDP on GDP/Capita<sup>12</sup>.

Financial institutions play a greater role in the economically leading countries, than in countries which are less developed. But in this respect, too, Poland does not deviate to any significant extent from the general pattern.<sup>13</sup>

Let us consider how good is a purely monetary explanation of inflation, i.e, how serious an error we shall commit if we fail to take into account the non-monetary shocks. The simplest possible model expresses the annual rate of inflation as a function of the growth of M2 in the same year, and it ignores such important issues as the presence of adjustment lags, the nature of inflationary expectations, and the rate of GDP growth. Despite the

---

<sup>12</sup>. The relevant statistics are:

| Year | Actual value | Predicted value | St. err. predict. | Resi-dual. | St. err. resid. |
|------|--------------|-----------------|-------------------|------------|-----------------|
| 1991 | 0.3163       | 0.3760          | 0.028             | -0.0597    | 0.219           |
| 1992 | 0.3576       | 0.3963          | 0.029             | -0.0387    | 0.212           |
| 1993 | 0.3594       | 0.4124          | 0.031             | -0.0530    | 0.265           |

<sup>13</sup>. A cross- section regression of the domestic credit/M2 ratio on GDP/capita using a sample of 80 countries, yields an Adjusted  $R^2 = 0.54$ , (significant on the 0.01 per cent level) and a positive regression coefficient statistically significant on the 0.007 level. The actual value of the Credit/M2 ratio for Poland does not deviate significantly from the value predicted by the regression.

oversimplifications, the model explains 60% of the inter-country variance of inflation<sup>14</sup>. The same relation holds for the economically leading countries and for all others <sup>15</sup> . For Poland, the actual and the predicted rates of inflation are almost identical. We thus conclude that, as a first approximation, we may rely on a monetary explanation of the Polish inflation.

We now shift our attention to the sources of money creation. During the "crawl plus mini-devaluations" period the M1 multiplier remained constant, but the M2 multiplier increased by about 15 per cent (Table 3) This, however, accounts for a small fraction of the expansion of broad money and of the strength of the inflationary push.

---

<sup>14</sup> For 1991 The basic statistical results are as follows:

| # of<br>observ. | Adj.<br>R <sup>2</sup> | F<br>value | Prob<br>>F | Regr.<br>coeff. | T<br>value | Prob.<br>>T |
|-----------------|------------------------|------------|------------|-----------------|------------|-------------|
| 75              | 0.6109                 | 117.204    | 0.0001     | 0.850709        | 10.826     | 0.0001      |

<sup>15</sup>. The coefficient of a dummy variable, inserted to distinguish between the economically leading countries and the rest of the world is statistically insignificant.

Table 3  
Money multipliers

| Year | Quarter | M1/Reserve money | M2/Reserve money |
|------|---------|------------------|------------------|
| 1990 | I       | 0.9              | 2.5              |
|      | II      | 1.1              | 2.4              |
|      | III     | 1.1              | 2.3              |
|      | IV      | 1.1              | 2.2              |
| 1991 | I       | 1.0              | 2.3              |
|      | II      | 1.1              | 2.6              |
|      | III     | 1.1              | 2.6              |
|      | IV      | 1.0              | 2.4              |
| 1992 | I       | 1.0              | 2.6              |
|      | II      | 1.0              | 2.7              |
|      | III     | 1.0              | 2.8              |
|      | IV      | 1.0              | 2.8              |
| 1993 | I       | 1.0              | 3.0              |
|      | II      | 1.0              | 3.0              |
|      | III     | 1.0              | 3.1              |
|      | IV      | 1.2              | 3.5              |
| 1994 | I       | 1.2              | 3.4              |
|      | II      | 1.1              | 3.4              |
|      | III     | 1.2              | 3.6              |
|      | IV      | 1.4              | 3.9              |

Source of data: IMF

Received economic doctrine points to fiscal deficits as the major cause of inflation.. To quote Fischer and Easterly,

"Rapid money growth is conceivable without an underlying fiscal imbalance , but it is unlikely. Thus rapid inflation is almost always a fiscal phenomenon."<sup>16</sup>

The theory underlying this statement has a venerable history going back to Keynes who pointed out that

"inflationary finance is the form of taxation which the public finds hardest to evade and even the weakest government can enforce, when it cannot enforce anything else" <sup>17</sup>

---

<sup>16</sup>. Fischer and Easterly (1990) p. 139

<sup>17</sup>. Keynes (1924) p. 46. For a recent discussion of the rationale of taxation-through-inflation, see Vegh (1989)

A crude rule of thumb is that the higher the fiscal the proportion of the fiscal deficit to the GDP, the stronger the inflationary push. This "rule" turns out to be highly unsatisfactory. For our sample as a whole the cross-section relation between the FD/GDP ratio and the rate of inflation is statistically insignificant. A division into a sub-sample consisting of 19 highly developed countries (group D) and a sub-sample that includes all the others (group L) shows that:

-In group "D" there is a statistically weakly significant positive relation between the fiscal deficit/GDP ratio and the inflation rate<sup>18</sup>.

-The "L" countries, as a group are more inflation prone than the "D" countries: in 34 of the 37 cases they have higher inflation rates than the statistical relation between the FD/GDP ratio and the inflation rate for the "D" group would indicate.<sup>19</sup> It is probable that "D" countries tend to monetize a higher proportion of their deficit than the "D" countries.

-In the case of "L" countries the relation between the FD/GDP

---

<sup>18</sup>. The adjusted  $R^2 = 0.115$ ;  $F=3.342$ , significant on the 8.5% level.

<sup>19</sup> The difference between the two groups of countries is statistically significant. The F test value equals 4.03. For a F test value of 3.23 the null hypothesis is rejected at the 5% level; for  $F= 5.18$  - at the 1% level.

ratio and the rate of inflation is statistically insignificant. This means that the FD/GDP ratio cannot be used as a predictor of the rate of inflation in an "L" country

A somewhat more sophisticated measure takes into account the degree of monetization of the deficit:

$$R/GDP(\dot{P} + \dot{G}) = FD/GDP$$

where: R = Reserve money

$\dot{P}$  = inflation rate

$\dot{G}$  = rate of growth of output

FD = fiscal deficit.

from which:  $\dot{P} = R/DF - \dot{G}$

When applied to the Polish data for the years 1991, 1992 and 1993 it yields:

| Table 4   |                      |           |                      |           |
|---|----------------------|-----------|----------------------|-----------|
| Actual and estimated inflation 1991-1993 (previous year =100) |                      |           |                      |           |
| Year  | Consumer price index |           | Producer price index |           |
|   | Actual               | estimated | Actual               | estimated |
| 1991  | 177                  | 173       | 148                  | 158       |
| 1992  | 145                  | 143       | 128                  | 138       |
| 1993  | 135                  | 128       | 132                  | 125       |
| Source: Based on IMF data                                     |                      |           |                      |           |

The estimates are remarkably close to the actual figures: in four out of six cases the estimates are marginally lower than the actual figures; in the two other cases they are marginally higher.



The slight downward bias of the estimates may reflect the increase in the magnitude of the M2 multiplier (Table 3).

Let us muster one more piece of evidence. As Table 5 shows, between the end of the second quarter of 1991 and the end of the third quarter of 1993 the claims of the NBP on General Government, expressed in constant zlotys, rose by a factor of 7.5. During the same period foreign assets of the NBP remained virtually constant. It is clear, therefore, that the monetization of the fiscal deficit acted as the "motor of inflation".

Table 5  
Claims on General Government and Foreign Assets of the NBP  
in billions of zlotys at 1990 prices

| Year | Quarter | Claims on GG. | Foreign assets |
|------|---------|---------------|----------------|
| 1991 | I       | 4,255         | 31,280         |
|      | II      | 5,966         | 30,787         |
|      | III     | 9,689         | 31,938         |
|      | IV      | 21,860        | 25,188         |
| 1992 | I       | 23,931        | 27,521         |
|      | II      | 23,848        | 27,667         |
|      | III     | 24,020        | 28,664         |
|      | IV      | 41,835        | 27,199         |
| 1993 | I       | 42,813        | 22,716         |
|      | II      | 44,793        | 21,036         |
|      | III     | 45,912        | 24,635         |
|      | IV      | 40,331        | 25,935         |
| 1994 | I       | 36,634        | 29,935         |
|      | II      | 37,350        | 27,970         |
|      | III     | 36,927        | 30,858         |
|      | IV      | 36,358        | 29,370         |

Source of data: IMF. Calculated by deflating the current zloty figures by the consumer price index (1990=100)

### The "pure crawl" period

The "pure crawl" policy represents, in a sense, a continuation of the PPP - oriented policy of the "crawl-cum-mini devaluations" period. Yet while in the earlier period the changes in the official exchange rate tracked the market equilibrium valuation of the zloty, in the later period the exchange rate was set in accordance with a sliding parity schedule. The rate of downward slide was periodically modified, yet, at all times the zloty was undervalued in real terms. Such a policy of "active exchange management"

"... has become increasingly prevalent among developing countries in recent years. With a view toward preserving competitiveness these countries have frequently adopted rules under which the nominal exchange rate is depreciated continuously to offset differences between domestic and foreign inflation rates... such rules which effectively target the real exchange rate establish a feedback mechanism from domestic inflation to the nominal exchange rate".<sup>20</sup>

Starting in mid- 1993 Poland's foreign reserves began rapidly to accumulate (Table 5 and fig. 1). The influx of foreign exchange swelled the money base (Table 5) To slow down the foreign exchange inflow, the rate of "crawl" was cut, in mid-1994, to 1.4 per cent per month, and in January, 1995 to 1.2 per cent per month. Yet reserves continued to rise: at the end of the second quarter of 1993 they stood at \$3.3 billion; at the end of the fourth quarter

---

<sup>20</sup> Montiel and Ostry (1992) pp 58-59

of 1994 at \$5.7, and the rise continued during the first quarter of 1995.- proof that the zloty was still undervalued.

Available statistics fail to reveal what caused the foreign exchange inflow. Preliminary figures indicate that though the balance of payments has been improving in 1993 and 1994 it is still in deficit - hence the country should be losing, rather than to be gaining reserves. But these figures do not take into account the border trade with the former Soviet Union countries. Possibly, too, there was an unrecorded influx of speculative capital. The Polish interest rates, in constant zloty terms, tend to be very low. For instance, during the last quarter of 1994 the NBP constant zloty discount rate was approximately zero (Table 6). However, given the 1.4 per cent monthly crawl rate, the discount rate in terms of dollars amounted to 12.5 per cent - a rate than was possibly sufficiently high to attract speculative funds. How important was such an influx, and whether it really occurred, is a matter of conjecture.

Table 6

Central bank discount rates, rates of inflation,  
and real interest rates in selected countries IVth quarter 1994

|                | (A)<br>Discount rate | (B)<br>Inflation rate | (C)<br>Real interest rate |
|----------------|----------------------|-----------------------|---------------------------|
| United States  | 4.75%                | 2.7%                  | 2.0%                      |
| Belgium        | 4.50%                | 2.0%                  | 2.5%                      |
| Portugal       | 10.50%               | 3.0%                  | 7.2%                      |
| Colombia       | 44.90%               | 23.2%                 | 17.6%                     |
| Ecuador        | 44.88%               | 24.6%                 | 16.2%                     |
| Czech Republic | 8.59%                | 10.6%                 | -1.8%                     |
| Hungary        | 25.00%               | 20.6%                 | 3.6%                      |
| Poland         | 33.00%               | 33.4%                 | 0.0%                      |

Source of data: IMF. Col. (A) end of quarter;  
col (B) QIV, 1994\QIV, 1993. Col (C) calculated from (A) and (B)

The policy of independent determination of the rate of slide of the zloty and of the nominal interest rate opened the NBP to conflicting pressures of interest groups. The undervaluation of the zloty was, clearly, to the advantage of export-oriented and of import-substituting sectors of the economy. But undervaluation resulted in the accumulation of foreign exchange. To control inflation, the NBP attempted to sterilize the growing foreign reserves. However, a tight-money policy ran counter the interests of borrowers, and, in the first place of the government, which sought to issue new debt at the least possible cost.

These conflict point to a fundamental flaw. As long as the rate of "slide" is set so as to result in the continuing real overvaluation of the zloty, international prices exercise an upward pull on domestic prices. The sliding undervalued currency policy

leads to a "vicious circle" of devaluations and of price increases<sup>21</sup>. Thus, even if the 1994 influx of reserves had been completely sterilized, the 1.4 per cent monthly rate of "slide" of the zloty would have resulted in a 15 per cent annual inflation. In fact the NBP's nominal interest rate was too low to achieve full sterilization, but, NBP's critics say, it was so high (in dollar terms) as to attract speculators and (in zloty terms) as to hinder recovery. Clearly, however, a lower nominal interest structure would have led to an even faster rise in prices. The only solution to the dilemma is to eliminate undervaluation, and to make a clear choice: either select an exchange "anchor" and adopt a passive fiscal and the monetary policy, or by assume fiscal and monetary responsibility for the rate of money supply, and let the market determine the exchange rate.

It thus would seem that (except for putting pressure on the NBP to reduce the nominal interest rates) the fiscal authorities are exonerated from contributing to the inflation during the "pure crawl" period. Indeed, though the government failed to achieve a budgetary balance, the fiscal deficits did not feed the inflation. In fact, the real value of NBP loans to the government declined (Tables 1 and 5 and fig. 1). This does not mean that the deficits did no harm to the economy. The government borrowed from commercial banks. To remain within credit limits the banks cut back on lending for industrial and commercial purposes (Fig. 2). Government

---

<sup>21</sup>. See Calvo, Reihart and Vegh (1994)

FIG. 1

# MONEY BASE IN POLAND: 1990.Q1-1994.Q3

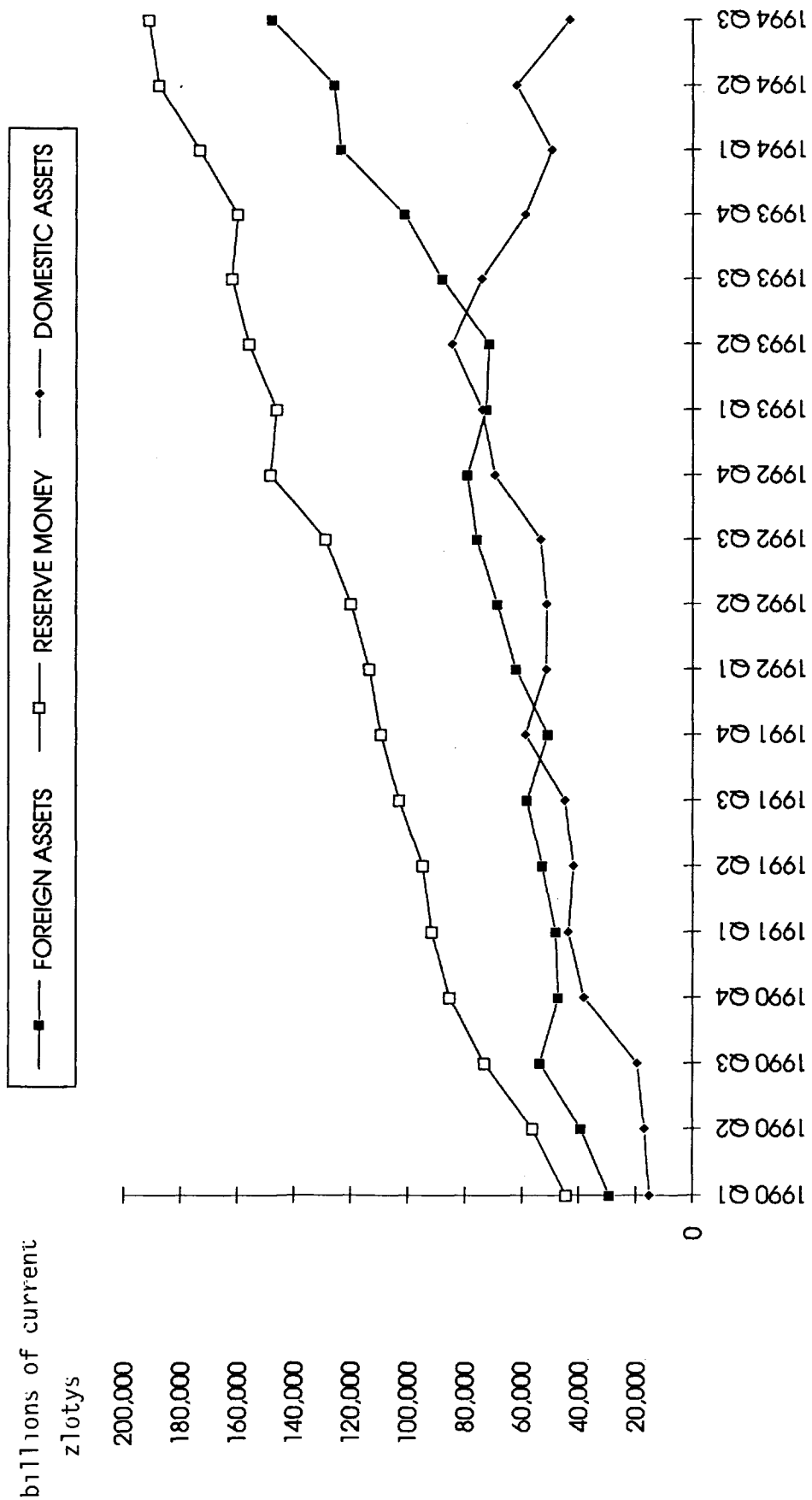
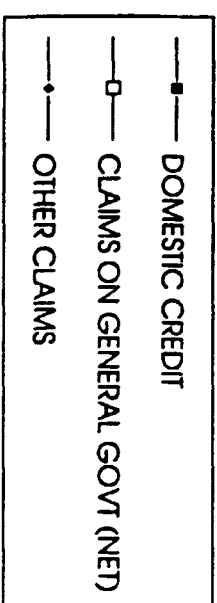
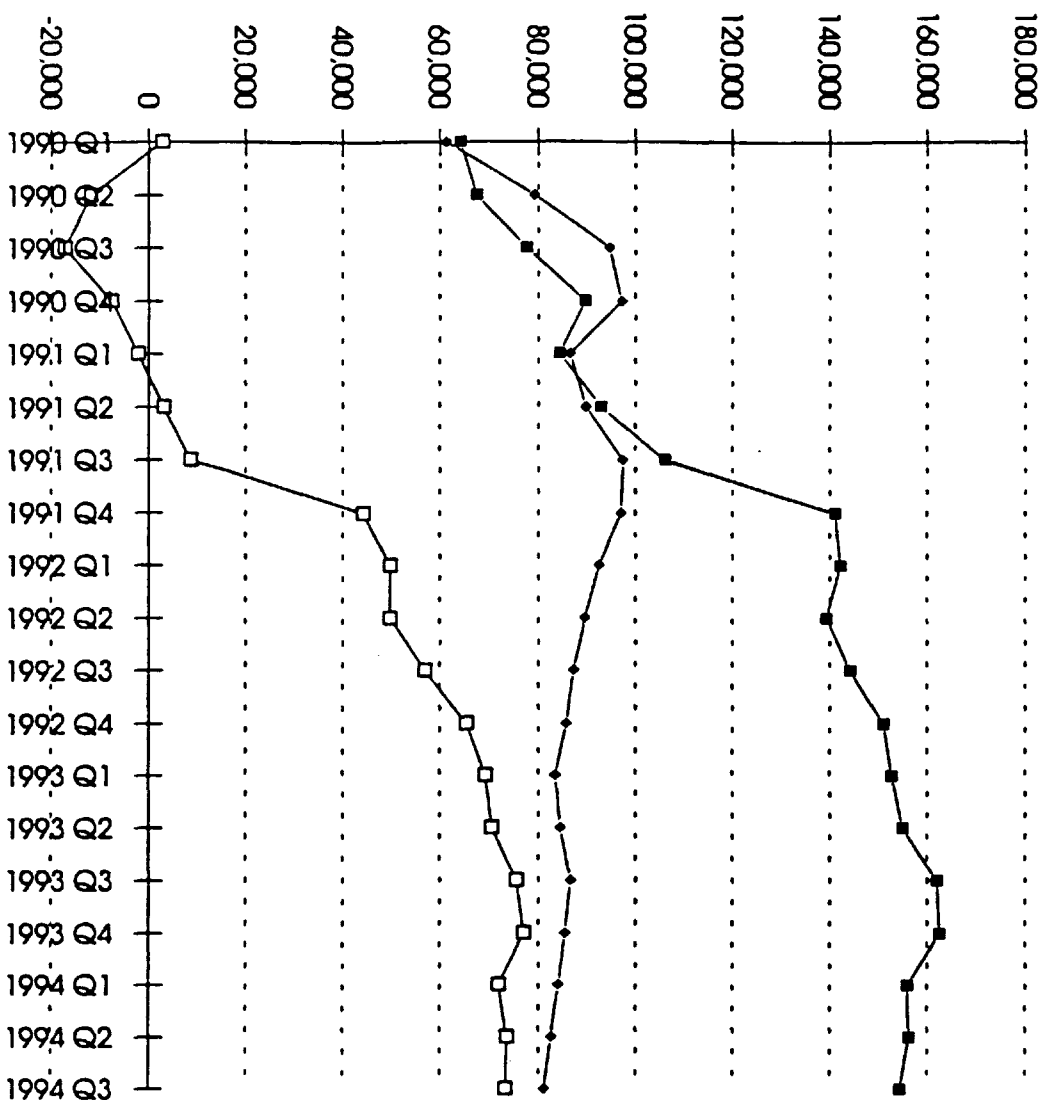


FIG.2

# REAL DOMESTIC CREDIT: POLAND 1990.q1 - 1994.q3



Billions of 1990 zlotys

\* Calculated by deflating nominal credit by the CPI  
Source: IMF

borrowing added to the demand for loanable funds; real interests rose and productive investment was crowded out. Thus fiscal policy, rather than NBP policy is at the root of the "credit tightness" borrowers complain about.

### Some conclusions

A review of the Polish experience reopens some important stabilization policy issues. The first concerns the new orthodoxy that calls for a "heterodox" (a multiple anchor) approach. The success achieved by the Polish government in bringing inflation under control in the course of the first six months of 1990 can be ascribed to the stringent fiscal and monetary measures. It is, however, open to doubt whether the foreign currency "anchor" contributed to the restoration of price stability. The linkage of the zloty to the dollar does not seem to have calmed down the inflationary expectations. Moreover, as long as the zloty was undervalued, the "anchor" exerted an upward price pull. When, in 1991, the "anchor" began to hold down the prices, it was hoisted.

The second question concerns the motor of persistence of the inflation. As the transition-triggered recession deepened, the government found itself incapable of balancing the budget. The monetization of the fiscal deficit explains the rise in prices in the 1991 to mid-1993 period. However, since mid - 1993, the real



value of the general government's debt held by the National Bank of Poland declined, yet the rate of inflation continued to surpass 30 per cent per year. The culprit, the data indicate, is the "crawling peg" - or, to be more precise, a crawling peg policy under which the zloty was consistently undervalued. Undervaluation exerted an upward pressure on prices through two channels: directly, through the pricing of products that entered foreign trade, and indirectly, via foreign reserve accumulation and growth of high power money. The "crawl" mechanism provided a backward linkage from prices to the exchange rate and perpetuated the inflationary cycle.

The third question is about the wisdom of covering the fiscal deficit through commercial placement of government securities. This method of deficit financing is non-inflationary, hence it avoids imposing a tax on cash balances. However, the commercial placement of government loans raises the total demand for loanable funds, raising the real interest rate, which is tantamount to the imposition of an investment tax. The ills accompanying inflation are well known; yet the ills resulting from the commercial bank financing of deficits are no less real. In Poland the banks have been funnelling resources to the government and away from the productive sectors of the economy. A government of an economy in transition eager to promote investment should not, therefore, finance its fiscal deficit by borrowing from commercial banks. The

first best way to avoid inflation is to balance the budget by trimming inessential expenditures and by levying explicit taxes that do not excessively distort the economy.

## References

Calvo, Guillermo A., Carmen Reinhart and Carlos A. Vegh (1995) "Targeting the Real Exchange Rate - Theory and Evidence" Journal of Development Economics (forthcoming)

Dornbusch, Rudiger (1982) "PPP Exchange-Rate Rules and Macroeconomic Stability" Journal of Political Economy vol. 90 no. 1 (February) 158-165

Fischer, Stanley and William Easterly, "The Economics of the Government Budget Constraint" The World Bank Research Observer vol. 5 no. 2 (July) 127-142

Instytut Koniunktur i Cen Handlu Zagranicznego (1994) Polska polityka handlu zagranicznego 1993-1994 Warszawa

Keynes, John Maynard (1924) Monetary Reform New York: Harcourt, Brace

Kierzkowski, Henryk, Marek Okolski and Stanislaw Wellisz, eds. (1993) Stabilization and Structural Adjustment in Poland London: Routledge.

Montiel, Peter and Jonathan Ostry (1991) "Macroeconomic Implications of Real Exchange Rate Targeting in Developing Countries" IMF Staff Papers vol. 38 no. 4 (December) 872-900

Nogaj, Mieczyslaw (1992) "Cele i zalozenia nowej polityki celnej, Kontrola Panstwowa 1, reprinted in his "Polityka celna" in Instytut Koniunktur i Cen Handlu Zagranicznego (1994)

Summers, Robert and Alan Heston, (1991) "The Penn World Table (Mark 5): An Expanded Set of International Comparisons 1950-1988" Quarterly Journal of Economics vol. CVI Issue 2 (May) pp. 328-368

Vegh, Carlos A. (1989) "Government Spending and Inflationary Finance A Public Finance Approach" IMF Staff Papers vol 36 no. 3 (September) 657-677

Wellisz, Stanislaw, Henryk Kierzkowski and Marek Okolski (1993) "The Polish Economy 1989-1991" in Kierzkowski, Henryk, Marek Okolski and Stanislaw Wellisz, eds. (1993)

The World Bank (1987) Poland Reform, Adjustment, and Growth Washington, D.C.

The World Bank (1994) Poland Policies for Growth with Equity Washington, D.C.

### **1994-1995 Discussion Paper Series**

Department of Economics  
Columbia University  
1022 International Affairs Bldg.  
420 West 118th Street  
New York, N.Y., 10027

The following papers are published in the 1994-95 Columbia University Discussion Paper series which runs from early November to October 31 (Academic Year). Domestic orders for discussion papers are available for purchase at \$8.00 (US) each and \$140.00 (US) for the series. Foreign orders cost \$10.00 (US) for individual paper and \$185.00 for the series. To order discussion papers, please send your check or money order payable to Department of Economics, Columbia University to the above address. Be sure to include the series number for the paper when you place an order.

- 708. Trade and Wages: Choosing among Alternative Explanations  
Jagdish Bhagwati
- 709. Dynamics of Canadian Welfare Participation  
Garrey F. Barret, Michael I. Cragg
- 710. Much Ado About Nothing? Capital Market Reaction to Changes in  
Antitrust Precedent concerning Exclusive Territories.  
Sherry A. Glied, Randall S. Kroszner
- 711. The Cost of Diabetes  
Matthew Kahn
- 712. Evidence on Unobserved Polluter Abatement Effort  
Matthew E. Kahn
- 713. The Premium for Skills: Evidence from Mexico  
Michael Cragg
- 714. Measuring the Incentive to be Homeless  
Michael Cragg, Mario Epelaum
- 715. The WTO: What Next?  
Jagdish Bhagwati
- 716. Do Converters Facilitate the Transition to a New Incompatible Technology?  
A Dynamic Analysis of Converters  
Jay Phil Choi
- 716A. Shock Therapy and After: Prospects for Russian Reform  
Padma Desai
- 717. Wealth Effects, Distribution and The Theory of Organization  
-Andrew F. Newman and Patrick Legros

*1994-95 Discussion Paper Series*

- 718. Trade and the Environment: Does Environmental Diversity Detract from the Case for Free Trade?  
-Jagdish Bhagwati and T.N. Srinivasan (Yale Univ)
- 719. US Trade Policy: Successes and Failures  
-Jagdish Bhagwati
- 720. Distribution of the Disinflation of Prices in 1990-91 Compared with Previous Business Cycles  
-Philip Cagan
- 721. Consequences of Discretion in the Formation of Commodities Policy  
-John McLaren
- 722. The Provision of (Two-Way) Converters in the Transition Process to a New Incompatible Technology  
-Jay Pil Choi
- 723. Globalization, Sovereignty and Democracy  
-Jagdish Bhagwati
- 724. Preemptive R&D, Rent Dissipation and the "Leverage Theory"  
-Jay Pil Choi
- 725. The WTO's Agenda: Environment and Labour Standards, Competition Policy and the Question of Regionalism  
-Jagdish Bhagwati
- 726. US Trade Policy: The Infatuation with FTAs  
-Jagdish Bhagwati
- 727. Democracy and Development: New Thinking on an Old Question  
-Jagdish Bhagwati
- 728. The AIDS Epidemic and Economic Policy Analysis  
-David E. Bloom, Ajay S. Mahal
- 729. Economics of the Generation and Management of Municipal Solid Waste  
-David E. Bloom, David N. Beede
- 730. Does the AIDS Epidemic Really Threaten Economic Growth?  
-David E. Bloom, Ajay S. Mahal
- 731. Big-City Governments  
-Brendan O'Flaherty
- 732. International Public Opinion on the Environment  
-David Bloom

***1994-95 Discussion Paper Series***

- 733. Is an Integrated Regional Labor Market Emerging in the East and Southeast Asia?  
-David Bloom, Waseem Noor
- 734. Migration, Integration and Development  
-Abhijit V. Banerjee, Andrew Newman
- 735. Infrastructure, Human Capital and International Trade  
-Ronald Findlay
- 736. Short Ballots: Why Mayors Are in Charge of So Many Different Things  
-Brendan O'Flaherty
- 737. Demand for Environmental Goods: Evidence from Voting Patterns on California Initiatives  
-Matthew Kahn and John Matsusaka
- 738. Inflation and Stabilization in Poland 1990 - 1995  
-S. Wellisz